




ORIGINAL ARTICLE

Obsessive-Compulsive Personality Disorder Related Beliefs, Functional Impairment and Hopelessness in Medical Students: The Mediating Role of Depression

Tıp Öğrencilerinde Obsesif-Kompulsif Kişilik Bozukluğuyla İlgili İnançlar İşlevsellikte Bozulma ve Umutsuzluk: Depresyonun Aracı Rolü

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ABSTRACT

Background/Aims: To assess the associations of hopelessness, functional impairment, depression, anxiety, stress, and obsessive-compulsive personality disorder (OCPD) in medical students.

Methods: The Sheehan Disability Scale, Beck Hopelessness Scale (BHS), Depression Anxiety Stress Scale-21 (DASS-21), and OCPD subscale of Personality Belief Questionnaire-Short Form (PBQ-SF-OCPD) were administered. Participants with BHS scores ≥ 9 were considered hopeless. A mediation analysis was performed using the PBQ-SF-OCPD score as an independent variable, DASS-21 Depression, Anxiety, and Stress scores as mediator variables, and BHS score as a dependent variable.

Results: Of 164 medical students, 29.88% (n=49) showed hopelessness (BHS scores ≥ 9). Also, SDS work/school (p<0.001), SDS social life (p<0.001), SDS family life (p=0.001), SDS-total (p<0.001), DASS-21 depression (p<0.001), DASS-21 anxiety (p<0.001), DASS-21 stress (p<0.001) and PBQ-SF-OCPD scores (p=0.019) were significantly higher in the hopelessness group than in the group without. BHS score was positively correlated with SDS work/school (r=0.446, p<0.001), SDS social life (r=0.473, p<0.001), SDS family life (r=0.328, p<0.001), SDS total (r=0.461, p<0.001), DASS-21 depression (r=0.686, p<0.001), DASS-21 anxiety (r=0.484, p<0.001), DASS-21 stress (r=0.501, p<0.001) and PBQ-SF-OCPD scores (r=0.190, p=0.015). According to mediation analysis results, the indirect effect of PBQ-SF-OCPD score on BHS score via DASS-21 depression score was 0.119 (95% CI: 0.027-0.230) and the standardized indirect effect of PBQ-SF-OCPD score on BHS score via DASS-21 depression score was 0.153 (95% CI: 0.035-0.284). The DASS-21 depression score was found to be a full mediator of the PBQ-SF-OCPD score on the BHS score.

Conclusions: The high rate of hopelessness in medical students is noteworthy. Findings regarding hopelessness's association with functional impairment and OCPD beliefs need to be explored in the future. Medical students with hopelessness may be closely monitored regarding depression's mediating effect on OCPD beliefs. In the interventions to improve mental health in medical students, clinicians may focus on the mediating effect of depression between OCPD and hopelessness.

Keywords: Anxiety, depression, hope, obsessive-compulsive personality disorder, psychosocial functioning, stress psychological

ÖZ

Amaç: Tıp fakültesi öğrencilerinde umutsuzluk, işlevsellikteki bozulma, depresyon, anksiyete, stres ve obsesif-kompulsif kişilik bozukluğu (OKKB) özellikleri arasındaki ilişkileri değerlendirmeyi amaçladık.

Yöntem: Katılımcılara Sheehan Yeti Yitimi Ölçeği (SYYÖ), Beck Umutsuzluk Ölçeği (BUÖ), Depresyon Anksiyete Stres Ölçeği-21 (DASÖ-21), Kişilik İnanç Ölçeği-Kısa Formu'nun OKKB alt ölçeği (KİÖ-KF-OKKB) uygulandı. BUÖ puanı ≥ 9 olan katılımcılar umutsuzluğu var olarak kabul edildi. Bağımsız değişken olarak KİÖ-KF-OKKB puanı, aracı değişken olarak DASÖ-21 Depresyon, Anksiyete ve Stres puanları ve bağımlı değişken olarak BUÖ puanı kullanılarak bir aracılık analizi yapıldı.

Bulgular: Çalışmaya 164 tıp öğrencisi katılmıştır. Tıp öğrencilerinin %29,88'i (n=49) umutsuzluk göstermiştir (BUÖ skorları ≥ 9). Umutsuzluğu olan grupta SYYÖ iş/okul skoru (p<0,001), SYYÖ sosyal yaşam skoru (p<0,001), SYYÖ aile yaşamı skoru (p=0,001), SYYÖ toplam skoru (p<0,001), DASÖ-21 depresyon skoru (p<0,001), DASÖ-21 anksiyete skoru (p<0,001), DASÖ-21 stres skoru (p<0,001) ve KİÖ-KF-OKKB skoru (p=0,019) umutsuzluğu olmayan gruba göre anlamlı olarak daha yüksek bulunmuştur. BUÖ puanı, SYYÖ iş/okul puanı (r=0,446, p<0,001), SYYÖ sosyal yaşam puanı (r=0,473, p<0,001), SYYÖ aile yaşamı puanı (r=0,328, p<0,001), SYYÖ toplam puanı (r=0,461, p<0,001), DASÖ-21 depresyon puanı (r=0,686, p<0,001), DASÖ-21 anksiyete puanı (r=0,501, p<0,001), DASÖ-21 stres puanı (r=0,501, p<0,001) ve KİÖ-KF-OKKB puanı (r=0,190, p=0,015) ile pozitif korelasyonu gösterdi. Aracılık analizi sonuçlarına göre, KİÖ-KF-OKKB puanının DASÖ-21 depresyon puanı aracılığıyla BUÖ puanı üzerindeki dolaylı etkisi 0,119 (95% CI: 0,027-0,230) ve KİÖ-KF-OKKB puanının DASÖ-21 depresyon puanı aracılığıyla BUÖ puanı üzerindeki standartize edilmiş dolaylı etkisi 0,153 (95% CI: 0,035-0,284) olarak bulundu. DASÖ-21 depresyon puanının, KİÖ-KF-OKKB puanının BUÖ puanı üzerindeki etkisine tam aracılık ettiği bulundu.

Sonuç: Tıp öğrencilerindeki yüksek umutsuzluk oranı dikkate değerdir. Umutsuzluğun işlevsellikteki bozulma ve OKKB özellikleriyle ilişkisine ilişkin bulgular daha farklı çalışmalarla gelecekte araştırılabilir. Umutsuzluk yaşayan tıp öğrencileri depresyonun OKKB inançları üzerindeki aracılık etkisi açısından yakından izlenebilir. Ruh sağlığı çalışanları, tıp öğrencilerinde ruh sağlığını iyileştirmeye yönelik müdahalelerde, OKKB ve umutsuzluk arasındaki depresyonun aracılık edici etkisine önem verebilirler.

Anahtar Kelimeler: Anksiyete, depresyon, psikososyal işlevsellik, obsesif kompulsif kişilik bozukluğu, stres, umut

Introduction

Being an undergraduate student in the faculty of medicine involves working with discipline, acquiring knowledge, and using it. Medical students experience challenging processes during their education. The stress of examinations, information overload, fear of failure, the intensity of the work schedule, and encountering terminally ill patients contribute to medical students' adverse emotions and cognitions (1).

Medical school students are faced with an intensive theoretical curriculum and a grueling clinical education. This challenging educational process requires a good level of functioning (5). Via the help of this functioning medical students can tackle the difficulties of medical education. Considering the professional negativities that medical students will experience in their functionality, the functionality of medical students is of great importance (6). Previously in an overview of systematic reviews, it was found that anxiety prevalence was between 7.04 to 88.30%, burnout between 7.0 to 86.0, depression between 11.0 to 66.5%, stress between 29.6 to 49.9% and suicidal ideation between 3.0 to 53.9% in medical students (7). As a consequence of the abovementioned prevalences of adverse psychiatric disorders among medical students, medical students may easily experience functional impairment difficulties (8).

Hope is a crucial aspect of the lives of individuals. Adaptation to harsh situations requires sufficient hope to cope with difficulties. Individuals often suffer from hopelessness in their daily lives. Unrealistic and pessimistic beliefs about the future are the core features of hopelessness. In hopelessness, assumptions that the problems will remain unresolved in the future are gaining ground. (9). Hopelessness was found to be associated with adverse consequences such as major depressive disorder, bipolar disorder, and suicide attempts (10, 11). Hopelessness and suicide behavior association is a significantly underscored issue in the literature (12, 13).

Dysfunctional personality disorder beliefs are the primary cognitive components that mainly characterize personality disorders in cognitive theory (14). Dysfunctional personality disorder beliefs include evaluations of oneself and others (15). Through the

effects of dysfunctional personality disorder beliefs, personality disorders' main styles of attitudes are generated. So, dysfunctional personality disorder beliefs may supply explanations for personality disorder traits (16).

Obsessive-compulsive personality disorder (OCPD) is characterized by perfectionism, control demands in relationships, and preciseness (17). Via these core features of OCPD, individuals with high levels of OCPD beliefs suffer from increased stress and interpersonal functioning problems (18). OCPD was found to be associated with psychosocial functioning difficulties, quality of life impairments, anxiety disorders, and depression (19, 20). In a meta-analysis, OCPD features were found to be stable as antisocial and schizoid personality disorder features (21). Additionally, OCPD has a very high prevalence among all personality disorders (20).

As we mentioned above, medical students often suffer from psychiatric disorders. The associations of functional impairment difficulties, hopelessness, and OCPD features may yield clues to intervene in these adverse conditions in undergraduate medical students. So, in the present study, we mainly aimed to assess associations between levels of hopelessness, OCPD beliefs, functional impairment, anxiety, depression, and stress in undergraduate medical students. To the best of our knowledge, previously the association of functional impairment, hopelessness, and OCPD beliefs was not studied in undergraduate medical students.

The main hypotheses of the present study are as follows:

- 1) Medical students in the hopelessness group would show higher levels of functional impairment and OCPD beliefs than the medical students in the group without hopelessness;
- 2) Hopelessness levels of the medical students would be associated with functional impairment and OCPD beliefs
- 3) The effects of OCPD beliefs on hopelessness levels would be mediated by the depression, anxiety, and stress levels of the medical students.

Materials And Methods

Study design and participants

The study was conducted among the undergraduate medical students at Atatürk University between February

2023 and June 2023. The Local Ethical Committee approved the study (Date: 26/01/2023, Meeting number: 1, Decision number: 80). The samples consisted of students from the Medical Faculty of Atatürk University, and the participants were defined from the students' online groups and fifth-grade students attending psychiatry courses. The exclusion criterion for the study was only not being able to read and understand the questions in Turkish (considering foreign students continuing their education in the faculty of medicine). Being a medical student was sufficient for inclusion. The authors administered scales to evaluate levels of hopelessness, OCPD beliefs, functional impairment, depression, anxiety, and stress. Depression Anxiety Stress Scale-21, Beck Hopelessness Scale, OCPD subscale of Personality Belief Questionnaire-Short Form, and Sheehan Disability Scale were used in the study to evaluate levels of depression, anxiety, stress, hopelessness, OCPD beliefs, and functional impairment, respectively. A brief socio-demographic form generated for this study was administered to participants. Before filling out the scales via online forms by the participants, all the participants ticked a box to state their informed consent. One hundred and sixty-four undergraduate medical students constituted the sample of the study.

Measures

Sheehan Disability Scale (SDS): Sheehan et al. developed the scale (22). The SDS is a self-report scale with three questions that evaluate functional impairment levels. This scale is composed of three subdimensions: Family life, social life, and work/school life. Each subdimension is evaluated by one question. The sum of the three questions resembles overall functional impairment. High scores on this scale resemble levels of high functional impairment.

Depression Anxiety Stress Scale-21 (DASS-21): Developed by Lovibond (23), DASS-21 is a self-report scale with 21 questions. This scale includes three subdimensions: Depression, anxiety, and stress. Seven questions evaluate each subdimension. The total points of each subdimension resemble each subdimension level. The Turkish reliability and validity of the study were performed (24).

Personality Belief Questionnaire-Short Form (PBQ-SF): This self-report scale consists of 65 questions and was developed by Butler et al. (25). PBQ-SF evaluates dysfunctional beliefs associated with ten personality disorders. In cognitive theory, dysfunctional beliefs

related to a personality disorder characterize that personality disorder (26). In the present study, only the OCPD subscale of the PBQ-SF (PBQ-SF-OCPD) was administered to participants to evaluate the beliefs specific to OCPD beliefs. High scores of PBQ-SF-OCPD mention high levels of OCPD beliefs. The Turkish reliability and validity of the study were performed (27).

Beck Hopelessness Scale (BHS): This scale was developed by Beck et al. (28) and is a self-report scale comprising 20 questions. High total scores for BHS indicate high levels of hopelessness. The Turkish reliability and validity of the study were performed by Durak and Palabıykođlu (29). BHS scores of ≥ 9 are considered hopelessness

Statistical Analyses

All analyses were performed on IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). The conformity of the variables to normal distribution was evaluated using histogram and Q-Q plots. Descriptive statistics were presented using mean \pm standard deviation for normally distributed continuous variables, median (25th percentile-75th percentile) for non-normally distributed continuous variables, and frequency (percentage) for categorical variables. In the assessment of BHS, students were divided into two groups according to the cut-off point (BHS scores ≥ 9 considered hopelessness) of BHS (30). Between groups analysis of normally distributed continuous variables was performed using Student's t-test. Between groups, non-normally distributed continuous variables were analyzed using the Mann-Whitney U test. Between groups, categorical variables were analyzed using the chi-square test or Fisher-Freeman-Halton test. Relationships between variables were evaluated using the Spearman correlation coefficients. Mediation analysis was performed using the Hayes Process procedure. In the mediation analysis, the PBQ-SF-OCPD score was an independent variable, DASS-21 Depression, Anxiety and Stress scores were mediator variables, and the BHS score was a dependent variable. Two-tailed p-values of less than 0.05 were considered statistically significant.

Results

We included 164 students (97 females and 67 males) in the study. The mean age was 23.54 ± 1.59 (range 20-30). The median Beck Hopelessness Scale (BHS) score was 5 (interquartile range 2.5-10, range 0-20). 29.88% ($n=49$) of the students had hopelessness (BHS scores ≥ 9) (Table 1).

Table 1. Summary of age, gender, grade, and scale/questionnaire scores

Age (years)	23.54±1.59
Gender	
Female	97 (59.15%)
Male	67 (40.85%)
Grade	
First	1 (0.61%)
Second	4 (2.44%)
Third	27 (16.46%)
Fourth	7 (4.27%)
Fifth	72 (43.90%)
Sixth	53 (32.32%)
SDS Score	
Work/School	3 (1-6)
Social Life	4 (1-6)
Family Life/Home Responsibilities	3 (1-5)
Total	10.5 (5-17)
BHS Score	5 (2.5-10)
≥9	49 (29.88%)
DASS-21 Score	
Depression	6 (2-9)
Anxiety	3.5 (1-7)
Stress	6 (4-9)
PBQ-SF-OCPD Score	12.30 ±6.23

Descriptive statistics are presented using mean±standard deviation for normally distributed continuous variables, median (25th percentile-75th percentile) for non-normally distributed continuous variables, and frequency (percentage) for categorical variables

We found no significant differences between BHS score groups (BHS scores ≥9) regarding age, sex, and grade. SDS Work/school score (p<0.001), SDS Social life score (p<0.001), SDS Family life score (p=0.001), SDS-Total score (p<0.001), DASS-21 Depression score (p<0.001), DASS-21 Anxiety score (p<0.001), DASS-21 Stress score (p<0.001) and PBQ-SF-OCPD score (p=0.019) were significantly higher in the hopelessness group than in the group without hopelessness (Table 2).

Table 2. Summary of age, gender, grade, and scale/questionnaire scores concerning BHS score

	BHS score		p
	<9 (n=115)	≥9 (n=49)	
Age (years)	23.63±1.57	23.33±1.63	0.256 [†]
Gender			
Female	65 (56.52%)	32 (65.31%)	0.382 [§]
Male	50 (43.48%)	17 (34.69%)	
Grade			

First	1 (0.87%)	0 (0.00%)	0.392 [†]
Second	3 (2.61%)	1 (2.04%)	
Third	17 (14.78%)	10 (20.41%)	
Fourth	3 (2.61%)	4 (8.16%)	
Fifth	50 (43.48%)	22 (44.90%)	
Sixth	41 (35.65%)	12 (24.49%)	
SDS Score			
Work/School	2 (1-5)	5 (3-6)	<0.001 [†]
Social Life	3 (1-5)	6 (4-7)	<0.001 [†]
Family Life/Home Responsibilities	2 (1-5)	4 (2-6)	0.001 [†]
Total	8 (3-15)	15 (11-18)	<0.001 [†]
DASS-21 Score			
Depression	4 (2-7)	11 (8-14)	<0.001 [†]
Anxiety	2 (1-5)	7 (4-11)	<0.001 [†]
Stress	5 (3-7)	9 (6-13)	<0.001 [†]
PBQ-SF-OCPD	11.56±6.03	14.04±6.38	0.019 [†]

BHS Score was positively correlated with SDS Work/School score (r=0.446, p<0.001), SDS Social life score (r=0.473, p<0.001), SDS Family life score (r=0.328, p<0.001), SDS Total score (r=0.461, p<0.001), DASS-21 Depression score (r=0.686, p<0.001), DASS-21 Anxiety score (r=0.484, p<0.001), DASS-21 Stress score (r=0.501, p<0.001) and PBQ-SF-OCPD score (r=0.190, p=0.015) (Table-3).

Table 3. Correlations between scale/questionnaire scores

	BHS Score	DASS-21 Depression Score	DASS-21 Anxiety Score	DASS-21 Stress Score	PBQ-SF-OCPD Score
SDS Work/School score	r	0.446	0.531	0.515	0.459
	p	<0.001	<0.001	<0.001	<0.001
SDS Social Life Score	r	0.473	0.568	0.536	0.507
	p	<0.001	<0.001	<0.001	<0.001
SDS Family Life/Home Responsibilities Score	r	0.328	0.483	0.440	0.417
	p	<0.001	<0.001	<0.001	<0.001
SDS Total Score	r	0.461	0.584	0.559	0.513
	p	<0.001	<0.001	<0.001	<0.001
BHS Score	r	-	0.686	0.484	0.501
	p	-	<0.001	<0.001	<0.001
PBQ-S1 Obsessive-Compulsive score	r	0.190	0.202	0.223	0.287
	p	0.015	0.009	0.004	<0.001

Statistically significant p values are shown in bold. r: Correlation coefficient, SDS: Sheehan Disability Scale, BHS: Beck Hopelessness Scale, DASS-21: Depression, Anxiety and Stress Scale - 21 Items, PBQ-SF-OCPD: Personality Belief Questionnaire-Short Form Obsessive-Compulsive Personality Disorder subscale

SDS Work/School score was positively correlated with

DASS-21 Depression score ($r=0.531$, $p<0.001$), DASS-21 Anxiety score ($r=0.515$, $p<0.001$), and DASS-21 Stress score ($r=0.459$, $p<0.001$). SDS Social life score was positively correlated with DASS-21 Depression score ($r=0.568$, $p<0.001$), DASS-21 Anxiety score ($r=0.536$, $p<0.001$), and DASS-21 Stress score ($r=0.507$, $p<0.001$). SDS Family life score was positively correlated with DASS-21 Depression score ($r=0.483$, $p<0.001$), DASS-21 Anxiety score ($r=0.440$, $p<0.001$), and DASS-21 Stress score ($r=0.417$, $p<0.001$). SDS Total score was positively correlated with DASS-21 Depression score ($r=0.584$, $p<0.001$), DASS-21 Anxiety score ($r=0.559$, $p<0.001$), and DASS-21 Stress score ($r=0.513$, $p<0.001$) (Table-3).

PBQ-SF- OCPD score was positively correlated with DASS-21 Depression score ($r=0.202$, $p=0.009$), DASS-21 Anxiety score ($r=0.223$, $p=0.004$), DASS-21 Stress score ($r=0.287$, $p<0.001$), (Table 3).

We performed mediation analysis using the PBQ-SF-OCPD score as an independent variable, DASS-21 Depression, Anxiety, and Stress scores as mediator variables, and BHS score as a dependent variable. PBQ-SF-OCPD score was significantly associated with DASS-21 Depression score ($b: 0.172$, 95% CI: 0.053 - 0.291, $p=0.005$), DASS-21 Anxiety score ($b: 0.190$, 95% CI: 0.086 - 0.294, $p<0.001$) and DASS-21 Stress score ($b: 0.223$, 95% CI: 0.122 - 0.324, $p<0.001$). According to the multivariable model, the DASS-21 Depression score was the only variable significantly associated with the BHS score ($b: 0.692$, 95% CI: 0.518 - 0.866, $p<0.001$), although the PBQ-SF-OCPD score was significantly associated with BHS score ($b: 0.163$, 95% CI: 0.045 - 0.281, $p=0.007$) according to total effect model (Table

4).

The indirect effect of PBQ-SF-OCPD score on BHS score via DASS-21 Depression score was 0.119 (95% CI: 0.027 - 0.230) and the standardized indirect effect of PBQ-SF-OCPD score on BHS score via DASS-21 Depression score was 0.153 (95% CI: 0.035 - 0.284) (Table 5). According to mediation analysis results, the DASS-21 Depression score was found to be a full mediator of the PBQ-SF- OCPD score on the BHS score. In contrast, DASS-21 Anxiety and Stress scores were found to be non-significant mediators (Figure 1).

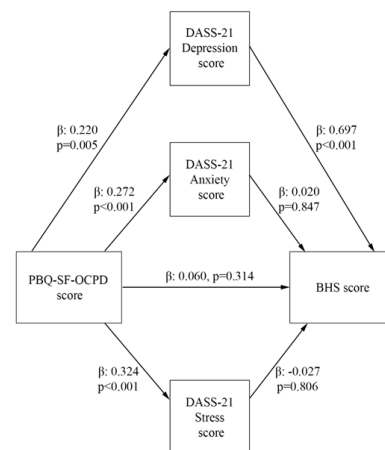


Figure 1. Mediation analysis results, Independent variable: Personality Belief Questionnaire - Short Form-Obsessive-Compulsive Personality Disorder subscale (PBQ-SF-OCPD) score, Mediator variables: Depression, Anxiety and Stress Scale - 21 Items (DASS-21) Depression, Anxiety and Stress scores, Dependent variable: Beck Hopelessness Scale (BHS) score, β : Standardized coefficient.

Table 4. Mediation analysis results

	Unstandardized coefficients (95% CI)	Standardized coefficients	p
Independent variables → Mediator variables			
PBQ-SF-OCPD Score → DASS-21 Depression Score	0.172 (0.053-0.291)	0.220	0.005
PBQ-SF-OCPD Score → DASS-21 Anxiety Score	0.190 (0.086-0.294)	0.272	<0.001
PBQ-SF-OCPD Score → DASS-21 Stress Score	0.223 (0.122-0.324)	0.324	<0.001
Multivariable Model			
PBQ-SF- OCPD Score → BHS Score	0.047 (-0.045-0.138)	0.060	0.314
DASS-21 Depression Score → BHS Score	0.692 (0.518-0.866)	0.697	<0.001
DASS-21 Anxiety Score → BHS Score	0.022 (-0.203-0.247)	0.020	0.847
DASS-21 Stress Score → BHS Score	-0.031 (-0.278-0.217)	-0.027	0.806
Total Effect Model			
PBQ-SF- OCPD Score → BHS Score	0.163 (0.045-0.281)	0.210	0.007

CI: Confidence interval, BHS: Beck Hopelessness Scale, DASS-21: Depression, Anxiety and Stress Scale - 21 Items, PBQ-SF-OCD: Personality Belief Questionnaire - Short Form Obsessive-Compulsive Personality Disorder subscale

Table 5. Indirect effects of PBQ-SF-OCPD score on BHS score

	Indirect effect (95% CI)	Standardized indirect effect (95% CI)
Total	0.116 (0.018-0.223)	0.150 (0.024-0.276)
Via DASS-21 Depression Score	0.119 (0.027-0.230)	0.153 (0.035-0.284)
Via DASS-21 Anxiety Score	0.004 (-0.055-0.057)	0.005 (-0.069-0.074)
Via DASS-21 Stress Score	-0.007 (-0.072-0.062)	-0.009 (-0.092-0.079)

CI: Confidence interval, BHS: Beck Hopelessness Scale, DASS-21: Depression, Anxiety and Stress Scale-21 Items, PBQ-S1: Personality Belief Questionnaire-Short Form

Discussion

In the present study, the mediation analysis revealed that depression levels were a full mediator of OCPD beliefs on hopelessness levels. One-third (29.88%) of undergraduate medical students showed hopelessness. In the group with hopelessness, levels of stress, anxiety, depression, functional impairment, and beliefs of OCPD were significantly higher than in the group without hopelessness. Additionally, the levels of hopelessness were significantly correlated with levels of functional impairment, anxiety, stress, depression, and OCPD beliefs.

In the present study, 29.88% of undergraduate medical students showed hopelessness. Previously, in Türkiye mild levels of hopelessness were found to be 54.4% among medical students (31). Another study from Türkiye revealed that only 30.6% of medical students had no hopelessness (32). In this study, 13.7% of the medical students had moderate hopelessness, and 7.3% of the medical students had severe hopelessness. Considering the high levels of hopelessness in the medical students in the mentioned studies, hopelessness may be considered a priority in mental health assessment in medical students.

In the present study, the medical student group with hopelessness had higher levels of overall functional impairment. In addition, considering subtypes of functional impairment (family life, social life, and work/school), the hopelessness group showed significantly higher levels than without the hopelessness group. In the correlation analysis, all subtypes of functional impairment and overall functional impairment levels were positively correlated with hopelessness. These associations between functional impairment and hopelessness in medical students warrant attention. To our knowledge, the present study is the first to reveal an association between hopelessness and functional impairment in medical students. Additionally, hopelessness levels were significantly associated with stress, anxiety, and depression levels. This finding is

similar to previous findings (33-35).

Hopelessness levels of medical students were related to OCPD beliefs in the present study. The hopelessness and beliefs of the OCPD association are an underinvestigated issue, and to the best of our knowledge, this association was not previously explored in medical students. Perfectionism is also one of the core features of OCPD, and perfectionism is one of the maladaptive coping styles (36). Previously, perfectionism was found to be associated with hopelessness (37). Over-concerning orderliness, rigidity, and controlling demands in relationships are the core features of OCPD, too. As with perfectionism, these features may have contributed to the present study's finding regarding hopelessness and dysfunctional beliefs related to OCPD association.

In the present study, depression levels were found to mediate the effects of OCPD beliefs on hopelessness levels. To our knowledge, this is the first finding considering the mediating effects of depression-induced OCPD beliefs on hopelessness in a sample of medical students. Mental health problems, especially depression, are widespread among medical students (38). Depression is a mental disorder with deleterious serious effects on the daily lives of individuals, and this mediating effect sounds reasonable. (39). Additionally, hopelessness is one of the main risk factors for suicide behaviors (37, 40, 41). Besides, suicide is a crucial topic for medical students. Medical students show higher rates of suicide behaviors than the general population (42). In a meta-analysis, the prevalence of suicidal ideation was found to be 18.7%, and the prevalence of suicide attempts was found to be 5.5% in medical students (43). Thus, when medical students with high levels of OCPD beliefs experience depressive symptoms, they may be more carefully monitored regarding suicide behaviors. Also, it should be beneficial not to forget that OCPD is a personality disorder with a very high prevalence among personality disorders (20).

OCPD belief levels were positively associated with

anxiety, depression, and stress levels in the present study. Previously, in a large population-based study, OCPD was found to be associated with depression and anxiety (20, 44). In addition, OCPD features were found to be related to stress and stress-related exhaustion (18, 45). Considering the main characteristics of the OCPD, associations with depression, anxiety, and stress are not surprising.

The limitations of the present study are to be mentioned. First, the study was performed in a cross-sectional design. So, we should be cautious when evaluating the results. Second, assessing the main variables of the present study with a larger sample size would be better. Third, self-report measures were used in this study. Future trials may be conducted in medical students with clinical interviews regarding this study's topics. Fourth, medical students face harsh working conditions and experience high levels of mental health problems. So, the present study's findings can not be directly associated with the general population. Fifth, most of the participants of the study are from the fifth and sixth grades of medical faculty. It would be better if the participants were distributed homogeneously among the grades.

To our knowledge, the present study is the first to show the relationship between the mediating effects of depression levels and the effects of OCPD beliefs on hopelessness in medical students. Additionally, the present study first showed that the hopelessness levels of medical students were associated with levels of OCPD beliefs and functional impairment. A substantial proportion of the medical students suffer from hopelessness. This high proportion of hopelessness needs to be prioritized in the development of policies to improve medical students' mental health. Future clinical trials assessing the roles of personality disorder traits and psychosocial functioning in hopelessness would be performed to improve mental health in medical students.

Authors' Contributions

Conception: EFA. Design: EFA, OŞ, CÖ. Data collection and processing: EFA, OŞ, CÖ. Data analysis and interpretation: EFA, OŞ, CÖ. Writing: EFA. Critical review: EFA, OŞ, CÖ.

Conflict of Interest

The authors declare no conflict of interest

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